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*Giardia duodenalis* and *Cryptosporidium* in children from Basse, Gambia

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Annually, diarrhoea causes about 1.8 million deaths worldwide. *Cryptosporidium* and *Giardia* are the most common causes of protozoan diarrhoea that lead to significant morbidity and mortality worldwide. Most studies conducted in Gambian children are related to severe malnutrition that nowadays remains an important clinical and public health problem in The Gambia. Dietary deficiencies seem unable to explain the poor growth, but close associations between gastrointestinal disease and height/weight growth have been described. Giardiasis is more prevalent in chronic diarrhoea and malnutrition, but its role in the growth of infants seems to be limited. While cryptosporidiosis are more prevalent in persistent diarrhoea cases, and these infections affect gut function and child growth.

**Objectives:** The purpose of this study was to study protozoan infections by protozoa *Giardia duodenalis* and *Cryptosporidium* spp. among children with diarrhoea from Gambia.

**Methods:** A total of 13 diarrheal samples were collected in 2013 from children from Basse (Gambia), aged between 7 months and 3 years, and suffering diarrhoea, vomiting and dehydration. In order to detect both protozoa, assemblage-specific PCRs targeting the 18S-rRNA and triose phosphate isomerase (TPI) genes for *Cryptosporidium* and *Giardia*, respectively, were carried out. The nucleotide sequences were analyzed for the isolates characterization using BLAST search. Phylogenetic analysis was performed to assess genetic diversity detected in the isolates. Chi-square test was used to evaluate the parasitological results.

**Results:** Out of 13 children examined, 5 (38%) and 6 (46%) were positive for *Cryptosporidium* and *Giardia* infections, respectively. Difference in the prevalence of giardiasis and cryptosporidiosis between males and females was not statistically significant. In one case, a co-infection was presented for both parasites studied. The nucleotide sequences of the 18S-rRNA gene for *Cryptosporidium* allowed the identification as *Cryptosporidium hominis*.

**Conclusions:** The present results are of health relevance, since a high prevalence of the protozoan parasites *Giardia* and *C. hominis* among children with diarrhea from Gambia is observed. These parasites could be the cause of a high number of diarrheal cases, and their identification could be of help for the correct application of the treatment. These parasites could be playing an underestimated role in the malnutrition status of children in Gambia. Furthermore, it is important the fact that cryptosporidiosis is known to affect gut function and child growth.